MA 371 9/16/03. Matrix Operations; Inverses

1. Let $A = \begin{pmatrix} 2 & 1 \\ -1 & 0 \end{pmatrix}, B = \begin{pmatrix} 3 & 0 \\ 1 & -2 \end{pmatrix}, C = \begin{pmatrix} -1 & -1 \\ 2 & -2 \end{pmatrix}$.

   (a) Verify that $(AB)C = A(BC)$

   (b) Find $(A^{-1})^T$.

   (c) Find $(A^T)^{-1}$.

   (d) Find $(AB)^{-1}$.

   (e) Find $B^{-1}A^{-1}$.

   (f) Find $p(C)$ if $p(x) = 2x^3 - 4x^2 + 1$.

2. Let $A = \frac{1}{9}\begin{pmatrix} 5 & -4 & 2 \\ -4 & 5 & 2 \\ 2 & 2 & 8 \end{pmatrix}$. Find

   (a) A^2.

   (b) $I - A$.

   (c) $(I - A)^2$.

3. Simplify: $(AB)^{-1}(AC^{-1})(D^{-1}C^{-1})^{-1}D^{-1}$.

4. Do Sec 3.2 D5,c

5. Do Sec 3.2 D8.